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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,887	02/11/2004	Colin Temple	HES 2003-IP-009967U1P1	3325
28857	7590	05/11/2009	EXAMINER	
CRAIG W. RODDY HALLIBURTON ENERGY SERVICES P.O. BOX 1431 DUNCAN, OK 73536-0440			FIGUEROA, JOHN J	
			ART UNIT	PAPER NUMBER
			1796	
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			05/11/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/776,887	Applicant(s) TEMPLE ET AL.	
	Examiner John J. Figueroa	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1,3-8,10-19,21-25,27,28,30,32-36,39-42,44,56,59-62,65-73,82,83,85-90,92-95,97-100 and 103-111.

Continuation of Disposition of Claims: Claims rejected are 1, 3-8, 10-19, 21-25, 27, 28, 30, 32-36, 39-42, 44, 56, 59-62, 65-73, 82, 83, 85-90, 92-95, 97-100 and 103-111.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :8/28/08; 10/27/08; 11/14/2008;02/26/2009; 04/09/2009.

DETAILED ACTION

Response to Amendment

1. The obviousness-type double patenting rejection over U.S. Serial Nos. 11/183,113 that was previously made of record in item 5 on page 3 of the Office Action dated August 11, 2008 (hereinafter 'OA') has been withdrawn in view of Applicant's submission of a Terminal Disclaimer with the response to OA filed January 27, 2009 (hereinafter 'Response').
2. The 35 U.S.C. 112, second paragraph, that was previously made of record in item 7 on page 3 of OA has been withdrawn in view of Applicant's amendment to the rejected independent claims in Response deleting the phrase "at least a portion of" from the claims.
3. The 35 U.S.C. 102 rejection of claims 82 and 83 as anticipated by USPN 7,348,365 to Lee (hereinafter 'Lee') has been maintained for reasons previously made of record in item 9 on page 4 of OA. This rejection as to claims 56, 62, 65, 66, 67, 69 and 70 has been withdrawn due to Lee not disclosing the PVP to be crosslinked.
4. The 35 U.S.C. 102 rejection of claims 56, 62, 65-73, 82, 83, 95, 100 and 103-111 as anticipated by USPN 7,276,249 B2 to Ryde et al. (hereinafter 'Ryde') has been maintained for reasons previously made of record in item 10 on page 4 of OA.
5. The 35 U.S.C. 103 rejection as unpatentable over U.S. Patent Application Publication No. 2002/0160919 to Stowe, II et al. (hereinafter 'Stowe') in view of USPN

4,498,994 to Heilweil (hereinafter 'Heilweil') and USPN 3,252,904 to Carpenter (hereinafter 'Carpenter') that was previously made of record in item 11 on page 6 of OA has been withdrawn in view of Applicant's amendment to the claims in Response limiting the nanoparticles having an average particle size of less than 1000 nanometers to be polyvinyl pyrrolidone (PVP).

6. The 35 U.S.C. 103 rejection as unpatentable over Stowe in view of USPN 3,504,746 to Freifeld et al. (hereinafter 'Freifeld') and Carpenter of record in item 12 on page 9 of OA has been withdrawn.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1, 3, 7, 8, 10-19, 24, 25, 27, 28, 30, 32, 36, 39-42, 56, 62, 65-73, 82, 83, 86, 90, 92-95, 100 and 103-111 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,792,412 to Heilweil, II et al. (hereinafter 'Heilweil'412') in view of either Carpenter or U.S. Patent Application Publication No. 2004/0106525 A1 to Willberg et al. (hereinafter 'Willberg').

Examiner notes that the Heiweil'412 prior art reference cited in the instant rejection is a distinct document from the Heilweil reference discussed in the prior Office Action.

Heilweil'412 discloses an aqueous brine fluid, for use in subterranean formation applications, such as drilling and completion operations, that contains a high salt

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concentration and a polyvinylpyrrolidone polymer (PVP) or copolymer, wherein PVP (shale inhibitor) can act to increase the viscosity of the fluid at elevated temperatures, and wherein the salt/brine can be calcium bromide or calcium chloride (flocculant and weighting agent) or sodium bromide. (Abstract; col. 1, lines 21-36; col. 2, lines 18-54; col. 5, lines 53-60; col. 7, lines 40-53) The salt can be present in 30-60% by weight, whereas preferred PVP has a molecular weight of at least 10,000 in an effective amount in solution of 0.5% to 10% by weight. (Col. 2, lines 43-69; col. 4, lines 59-67; col. 7, lines 27-40; Examples 1 and 2; Table 3)

Heilweil'412 further discloses the aqueous drilling fluid further containing surfactants and fluid control solids/agents, such as clay (also weighting agent). (Col. 7, lines 53-61; claim 11) In col. 2, lines 23-28; and in claims 7; 11; and 12, Heilweil'412 expressly discloses using the drilling fluid in a well bore operation. The suspended salt in the saturated brine and/or the fluid loss control solid/agent can serve as a "bridging agent". (See. e.g., col. 5, lines 13-35)

However Heilweil'412 does not expressly disclose PVP to be crosslinked and having a particle size of less than 1000 nanometers.

On the other hand, as previously discussed in item 11 of OA, Carpenter teaches adding crosslinked PVP to a fluid composition for use in subterranean formation applications, such as acidizing **or** hydraulic fracturing, wherein the fluid composition can comprise a chloride salt brine and a particle size of less than about 20 to 60 mesh. (Col. 1, lines 9-20; col. 1, line 51 to col. 2, line 3; col. 2, lines 13-45; col. 3, lines 8-57; col. 7, lines 31-60; Table IV; Drawing) The cited drawing in Carpenter depicts variation of

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rates of swelling inhibition with respect to particle size. (Col. 5, lines 35-68; col. 7, line 68 to col. 8, line 18)

Carpenter further teaches that the rate of swelling activity (fluid-loss control rheology) of the crosslinked PVP particles in brine/water can be adjusted by particle size to attain a preferred rate of fluid loss control in the subterranean formation application. (Col. 8, lines 26-61)

Similarly, Willberg teaches that particle sizes of individual components of a fluid treatment composition may be the same or different. Particularly, in regards as to particle sizes of a fluid loss additive or filter cake former components (product of a drilling operation), particle size depends primarily upon the pore size distribution of the rock onto which the filter cake is to be deposited and whether or not it is intended to eliminate or just to reduce fluid loss. Criteria for, and methods of, choosing the optimal particle sizes or particle size distributions for conventional fluid loss additives and filter cake components are well known. Other particle sizes or size distributions may be selected as a compromise between those that are optimal for fluid loss control or filter cake formation and those that are optimal for self-destruction at the desired time and rate. The rate of self-destruction can readily be measured in the laboratory in a given fluid at a given temperature. (Willberg, page 3, [0018])

Therefore, it would have been obvious to a person of ordinary skill in the art at the time that the claimed invention was made to choose crosslinked PVP (of a preferred/optimal particle size) for the PVP component of the aqueous drilling brine composition in Heilweil412's method of drilling a well bore. It would have been obvious

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to one skilled in the art to choose a preferred/optimal particle size (such as less than about 1000 nm) of crosslinked PVP in the aqueous drilling fluid composition to be able to manipulate the degree of fluid-loss control and attain a resultant method of drilling that is more efficient as taught by Carpenter or Willberg.

Thus the instant claims are unpatentable over Heiweil'412 and either Carpenter or Willberg.

9. Claims 4-6, 14, 21-23, 33-35, 40, 56, 59-62, 65-73, 85, 87-89, 93, 97-99, 107 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heilweil'412' in view of Carpenter or Willberg (as applied to the claims above) and further in view of Stowe.

Heiweil'412, Carpenter and Willberg were discussed above in the instant action. These references do not disclose the aqueous brine composition further containing a latex polymer.

However, as discussed previously in item 11 of OA, Stowe teaches a water-based drilling fluid composition containing a polymeric latex capable of providing a deformable latex film or seal on at least a portion of a subterranean formation, wherein the polymeric latex provides reduction of the rate of drilling fluid pressure in the borehole wall of the subterranean formation during drilling and enhanced flocculation properties; wherein the essential components of the water-based drilling fluids are the polymer latex and water. (Abstract; Page 2, [0022] and [0023]; Table 1) The polymer latex is preferably a carboxylated styrene/butadiene copolymer and the average particle size of the polymer latex can be less than 1 micron (1000 nanometers), preferably

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having a diameter of about 0.2 microns (200 nm) or less. (Page 2, [0024]) The proportion of the polymer latex in the drilling mud can range from about 0.1 to about 10 vol. %. (Page 2, [0024]) This latex provides enhanced flocculation properties to the fluid (Table 1). The fluid can further contain salt; a precipitating agent; and surfactant, whereas the water can be fresh water. (Page 2, [0025] to [0028]) Other additives can be added to help balance the fluid properties. (Page 2, [0023])

Stowe further teaches that the addition of the latex to the brine fluid addresses a particular problem that arises when drilling into shale formations with a water-based fluid as to the pore pressuring increase and swelling from penetration of the shale by the fluid. The addition of the deformable latex to the drilling fluid composition can serve to bridge a crack opening to seal a fracture and establish differential pressure across the latex thereby consolidating the formation and providing wellbore stability. (Page 1, [0005] to [0012]; page 2, [0012]; page 6, [0075] to page 7, [0080])

Accordingly, it would have been obvious to a person of ordinary skill in the art at the time that the invention was made to add a deformable polymeric latex to the aqueous drilling fluid composition used in Heilweil'412' and Carpenter/Willberg's method of drilling a well bore. It would have been obvious to one skilled in the art to do so to attain a more efficient method of drilling due to the latex reducing shale swelling and thereby providing wellbore stability as taught by Stowe.

Thus the instant claims are unpatentable over Heilweil'412, Stowe and either Carpenter or Willberg.

Response to Arguments

The Obviousness-Type Double Patenting Rejection (item 5 of OA)

10. Applicant's arguments in Response regarding the captioned obviousness-type double patenting rejection have been considered but have become moot due to the withdrawal of this rejection in view of the filing of a terminal Disclaimer with Response.

The 35 U.S.C. 112, Second Paragraph, Rejection (item 7 of OA)

11. Applicant's arguments in Response regarding the captioned indefiniteness rejection of claim 7 have been considered but have become moot due to the withdrawal of this rejection in view of Applicant's amendment to the rejected claims in Response.

The 35 U.S.C. 102 Rejection over Lee (item 9 of OA)

12. Applicant's arguments filed regarding the 35 U.S.C. 102 rejection of claims 82 and 83 as anticipated by Lee have been fully considered but deemed unpersuasive.

Applicant's arguments in Response regarding composition claims 82 and 83 limiting the composition to "a drilling fluid" are found not persuasive. This is a future intended use of the claimed composition. A recitation of an intended future use of the claimed fluid composition must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art composition is capable of performing the intended use, then it meets the claim.

Applicant's argument that Lee does not disclose a scale inhibitor is incorrect. PVP can inhibit scale formation by reducing shale swelling (as discussed above in the prior art rejections).

Thus, the claims, as amended, remain anticipated by Lee.

The 35 U.S.C. 102 Rejection over Ryde (item 10 of OA)

13. Applicant's arguments filed regarding the 35 U.S.C. 102 rejection of claims 56, 62, 65-73, 82, 83, 95, 100 and 103-111 as anticipated by Ryde have been fully considered but deemed unpersuasive.

Applicant's arguments in Response regarding Ryde not disclosing the composition used in a drilling operation are not persuasive. As was the case discussed above regarding Lee, this is a future intended use of the claimed composition. If the prior art composition is capable of performing the intended use, then it meets the claim.

Applicant's arguments that Ryde does not disclose the particulate *formulation* to be less than about 1000 nanometers are incorrect. Applicant's attention is respectfully addressed to the exemplary nanoparticulate tablet formulations in the tables in column 20 and 21, all of which contain crospovidone (crosslinked PVP); and to formulation 6 in Table 4 on col. 27, disclosing the size of a particle formulation containing PVP to be 750 nm. These tablet formulations can be dispersed in an aqueous solution for parenteral injection applications and can further include, e.g., sodium chloride (weighting agent). (Page 23, line 55 to col. 24, line 11)

Thus, the claims, as amended, remain anticipated by Ryde.

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The 35 U.S.C. 103 Rejections (items 5 and 6 of OA)

14. Applicant's arguments filed in Response traversing the captioned 35 U.S.C. 103 rejections have been considered but deemed moot in view of the withdrawal of these rejections in favor of the new grounds of rejections discussed above.

As to Applicant's arguments that Carpenter is drawn to an acidizing process, as shown above in the discussed above in the instant action, Carpenter also teaches using the crosslinked PVP particles in other subterranean formation applications, including hydraulic fracturing.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Figueroa whose telephone number is (571)272-8916. The examiner can normally be reached on Monday-Thursday 8:00-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796

JJF/JS